2012 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2012 - 5/31/2013

HERD: MD104 - SUBLETTE

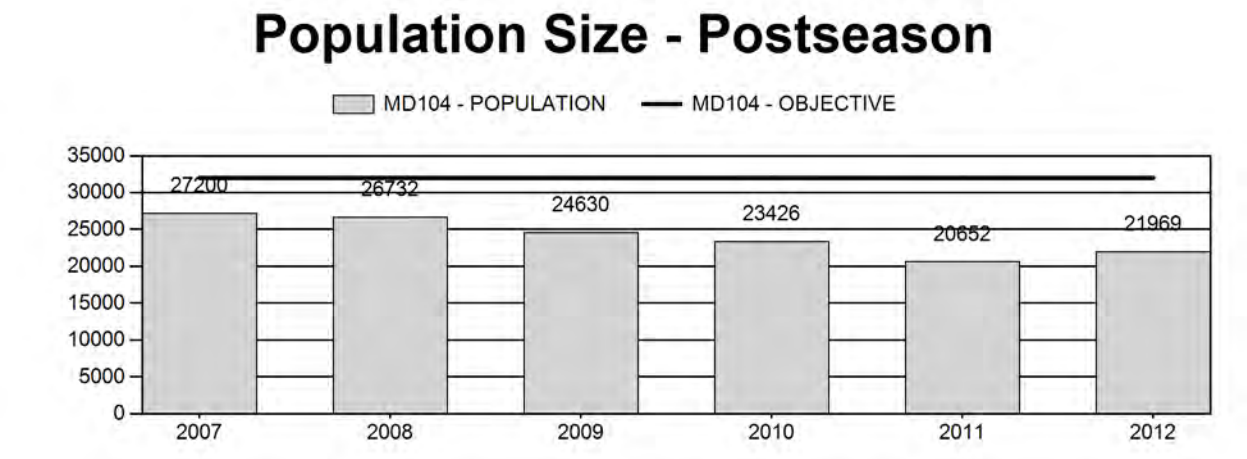
HUNT AREAS: 130, 138-142, 146, 150-156, 162
PREPARED BY: DEAN CLAUSE

	2007 - 2011 Average	2012	2013 Proposed
Population:	24,528	21,969	21,385
Harvest:	1,838	1,297	1,350
Hunters:	4,787	3,808	3,900
Hunter Success:	38%	34%	35%
Active Licenses:	4,790	3,817	3,900
Active License Percent:	38%	34%	35%
Recreation Days:	28,142	21,617	21,600
Days Per Animal:	15.3	16.7	16
Males per 100 Females	37	36	
Juveniles per 100 Females	67	74	

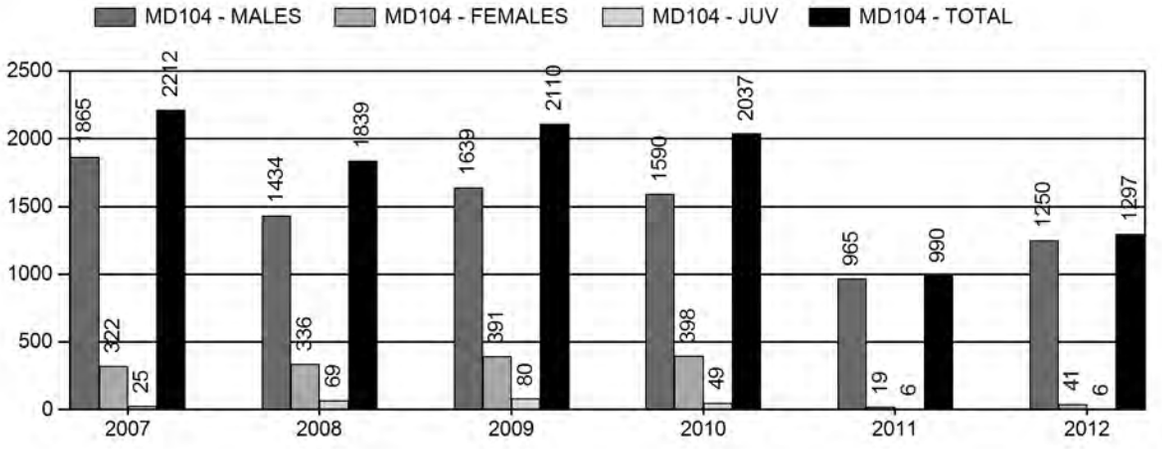
Population Objective:	32,000
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-31.3%
Number of years population has been + or - objective in recent trend:	9
Model Date:	5/13/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

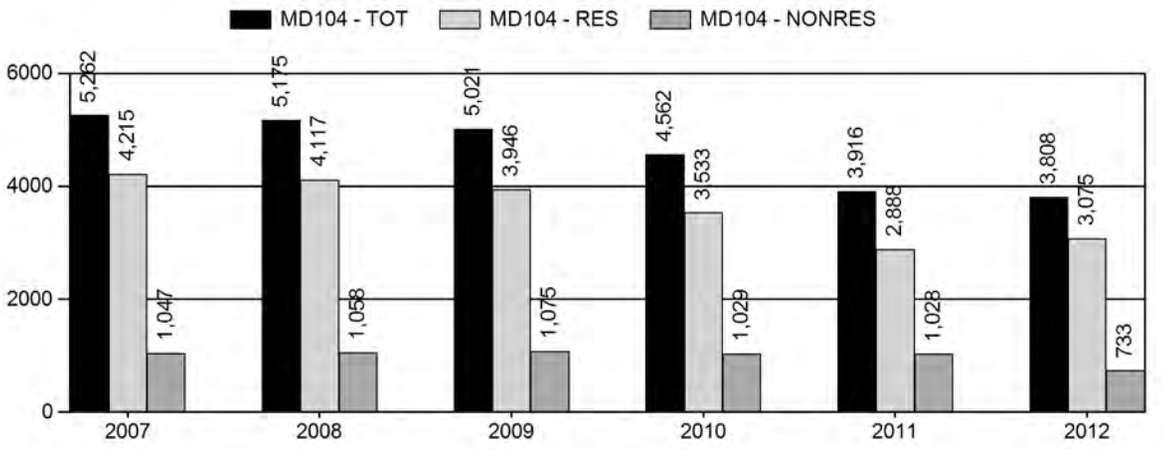
	JCR Year	Proposed
Females ≥ 1 year old:	0.4%	0.4%
Males ≥ 1 year old:	27%	27%
Juveniles (< 1 year old):	<1%	<1%
Total:	5.5%	5.9%
Proposed change in post-season population:	+6%	-3%



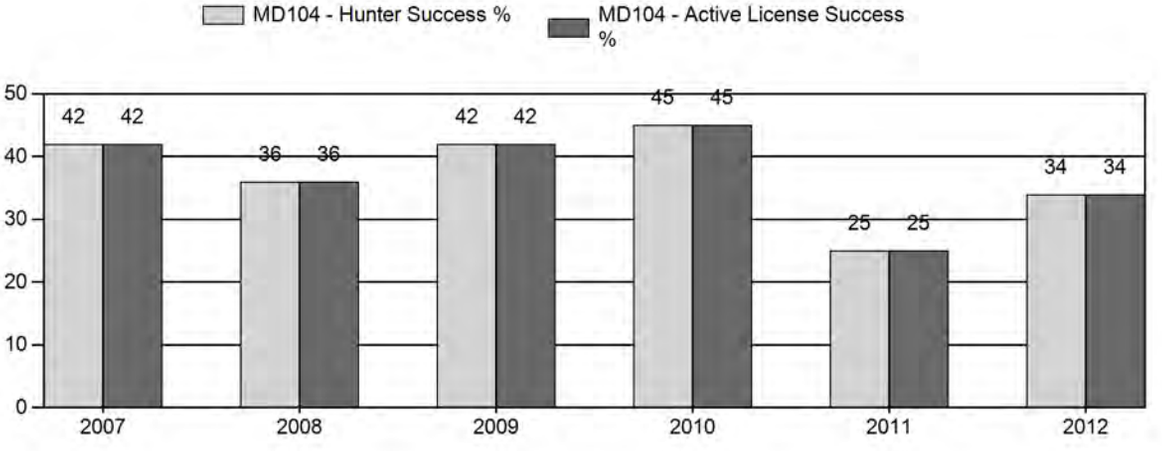
Harvest



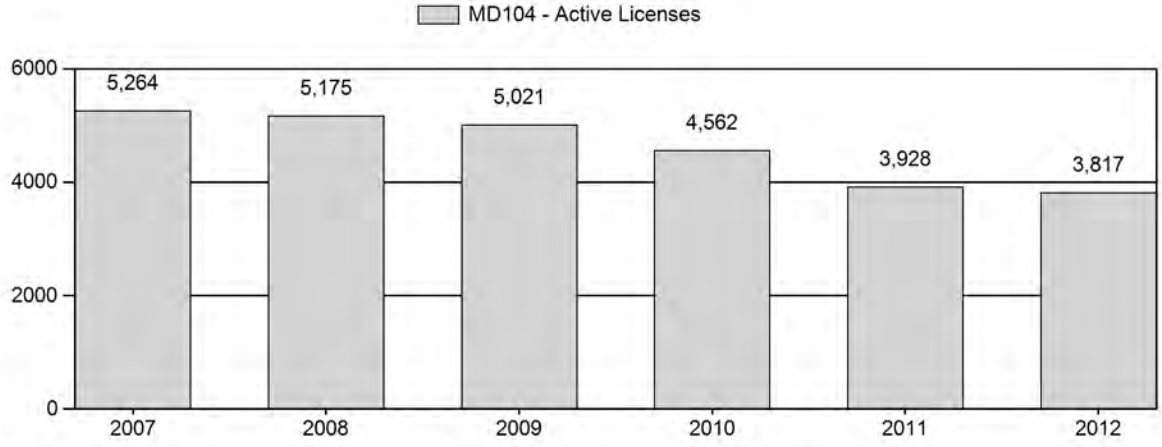
Number of Hunters



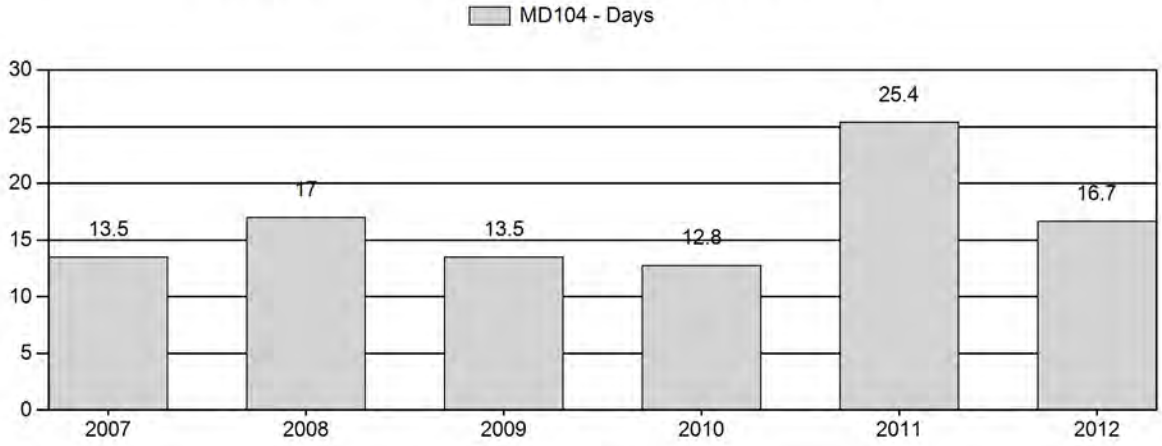
Harvest Success



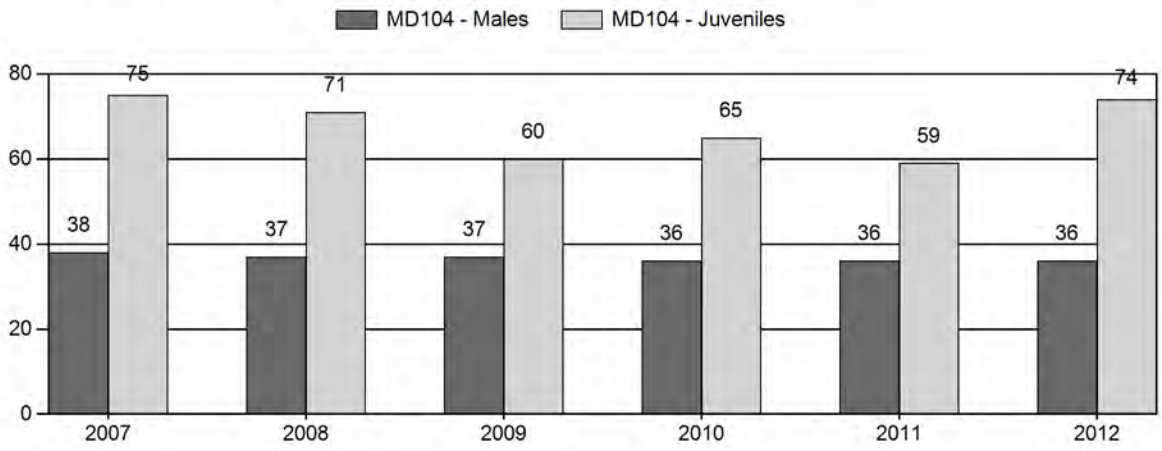
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD104 - SUBLETTE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	27,200	822	1,112	1,934	18%	5,123	47%	3,861	35%	10,918	2,758	16	22	38	± 1	75	± 2	55
2008	26,732	621	945	1,566	18%	4,205	48%	2,967	34%	8,738	1,570	15	22	37	± 1	71	± 2	51
2009	24,630	576	1,143	1,719	19%	4,596	51%	2,758	30%	9,073	1,186	13	25	37	± 1	60	± 1	44
2010	23,426	549	1,156	1,705	18%	4,677	50%	3,043	32%	9,425	1,345	12	25	36	± 1	65	± 2	48
2011	20,652	173	894	1,067	18%	2,985	51%	1,747	30%	5,799	1,141	6	30	36	± 1	59	± 2	43
2012	21,969	357	890	1,247	17%	3,498	48%	2,598	35%	7,343	1,626	10	25	36	± 1	74	± 2	55

2013 Seasons - Sublette Mule Deer (MD104)

Hunt Area	Type	Opens	Closes	Quota	Limitations
130		Oct. 1	Oct. 6		General license; antlered mule deer or any white-tailed deer
	1	Oct. 15	Oct. 31	25	Limited Quota; antlered deer
	6	Oct. 15	Dec. 31	75	Limited Quota; doe or fawn valid in that portion of Area 130 on private lands within Sweetwater County.
138, 139, 140, 142	3	Oct. 1	Nov. 30	50	Limited quota; any white-tailed deer.
141, 162	1	Oct. 1	Oct. 21	100	Limited Quota; antlered deer
		Oct. 22	Oct. 31		Unused Areas 141, 162 Type 1 licenses valid for antlered deer on national forest
138, 139, 140, 142, 146, 151, 152, 153, 154, 155, 156		Sept. 15	Oct. 6		General license; antlered mule deer or any white-tailed deer
150		Sept. 15	Oct. 6		General license; antlered deer valid only in that portion of Area 150 west of Wyoming Highway 390
		Oct. 1	Oct. 6		General license; antlered deer valid in that portion of Area 150 east of Wyoming Highway 390, archery only
Archery Seasons					
130,141,162		Sept. 1	Sept. 30		Refer to Section 3
138-140, 142,153, 154,146, 150-156		Sept. 1	Sept. 14		Refer to Section 3

REGION H NON-RESIDENT QUOTA - 800 LICENSES

Hunt Area	License Type	Quota Changes from 2012
130	1	+5
130	6	+25
Herd Unit Total	**1**	**+5**
	6	**+25**

Management Evaluation
Current Postseason Population Management Objective: 32,000
Management Strategy: Special
2012 Postseason Population Estimate: ~22,000
2013 Proposed Postseason Population Estimate: ~21,500

The Sublette Mule Deer Herd Unit contains 2,682 square miles of habitat throughout Teton, Sublette, Lincoln and Sweetwater Counties. This deer herd contains 15 hunt areas (130, 138-142, 146, 150-156, 162) and is managed under special status which mandates postseason buck:100 doe ratios range between 30 to 45:100. The postseason population objective is 32,000 deer, adopted in 1991.

Herd Unit Issues
Winter survival, habitat condition and quality on winter ranges, and habitat loss (direct and indirect) from gas and residential development are the primary issues the influencing population dynamics in this herd unit. During the past 10 years, this deer herd experienced two winters that resulted in above normal fawn mortality (> 50% loss). Most recently, the 2010-11 winter fawn mortality estimates exceed 70%. Winter fawn mortality averages around 30% on most years when winter severity is moderate to average. Current annual growth on key browse species improved during 2008 and 2009, declined in 2010, improved again in 2011, and declined in 2012. Overall habitat conditions remain poor, but conditions have improved on certain years. Gas field development has and will continue to impact deer numbers within this herd unit. The Pinedale Anticline gas field development overlaps with crucial winter range located on the Mesa, where annul population estimates documented deer numbers have decline by 51% from 2001 – 2011. Studies have demonstrated that deer avoid areas with intensive winter gas development, resulting in less forage available for wintering deer within and adjacent to gas development.

Weather
With the overall large size of this herd unit, weather conditions can be somewhat different by geographic area (i.e. Wyoming Range Mountains vs. Wind River Mountains vs. Gros Ventre Mountains). In general, the overall amount of precipitation was below normal during 2009 and 2010, although spring moisture was good during those years resulting in improved forage production on winter range habitat. In 2011 winter and spring moisture was well above normal resulting in very good forage production. During 2012, severe drought conditions persisted through the entire year resulting in one of the worst production years, as several sagebrush monitoring locations had essentially no current annual growth. Of particular importance to this deer herd is shrub production on native winter ranges at lower elevations in the Upper Green River Basin. Late winter and spring precipitation (April to early June) is essential for good annual shrub production.

Habitat

The Pinedale Region has several shrub monitoring sites where production and utilization data is collected. Figure 1 shows average shrub production by species by year. The primary shrubs available on winter ranges within this herd unit are mountain and Wyoming sagebrush and bitterbrush. Shrub utilization has varied by year as winter snow conditions (depth and crusting) appear to influence winter shrub use by location. The 2011-12 winter was mild resulting in below normal utilization due to fewer deer, scattered distribution, and improved leader production. The 2012-13 winter thus far has also been mild, although shrub leader production was very poor and may negatively influence winter survival.

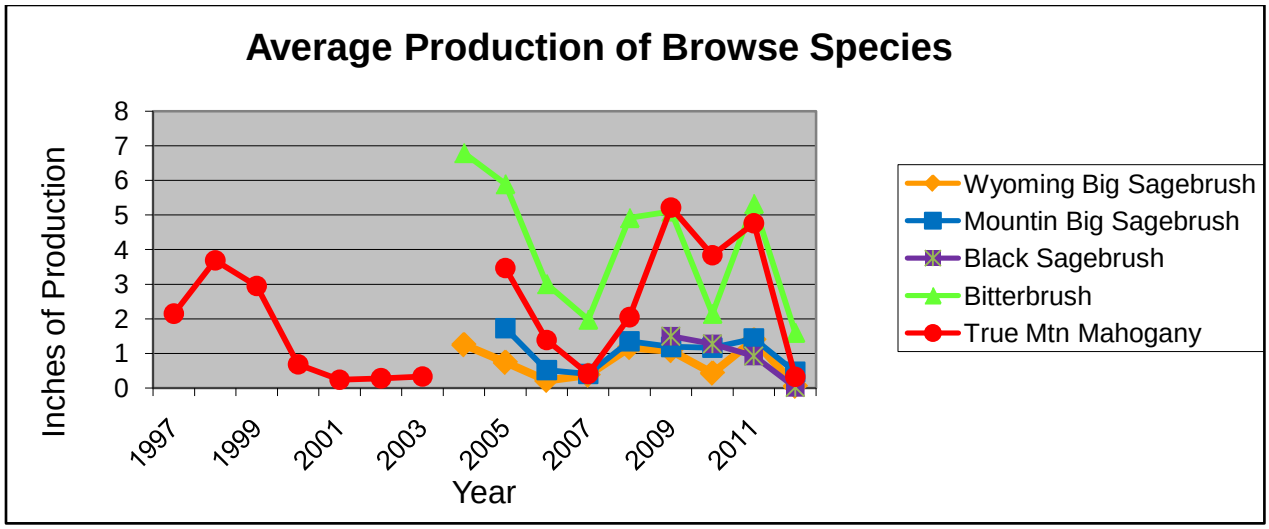


Figure 1. Shrub Production in the Upper Green River Basin, 1997-2012.

Please see the 2012 Annual Report Strategic Habitat Plan Accomplishments, Jackson and Pinedale Region sections located at either the Jackson or Pinedale Game & Fish Regional Office for detailed summaries of habitat work within the Sublette Herd Unit.

Field Data

Postseason herd composition (classification) counts in early December 2012 totaled 7,343 deer, and increase from the 2011 total of 5,799, and a decrease from the 2010 total of 9,425 deer. Light to no snow cover existed during the 2012 survey, which led to a larger proportion of deer scattered at higher elevations and on northern parts of crucial winter habitats. With the exception of budget constraints reducing flight survey time by 4 hours during 2008, aerial survey flight time/coverage has remained similar over the years.

The postseason 2012 total buck:100 doe ratio of 36:100 and has changed very little since 2008 and is meeting management goals for this herd unit. Yearling buck:100 doe ratios in 2012 were 10:100 and typically is a good indicator of fawn survival the previous year. The low yearling buck ratio of 6:100 in 2011 is attributed to fawn loss (estimated around 70%) during the winter of 2010-11. Adult buck ratios also vary annually based on yearling buck recruitment and buck harvest levels. The 2012 adult buck: 100 doe ratio was 25.

The 2012 fawn: 100 doe ratio increased to 74:100 from 59:100 in 2011, and 65:100 in 2010. This improved fawn production along with decent winter survival should result in population growth in 2013.

Harvest Data
The 2012 harvest was approximately 1,300 total deer (1,250 bucks and 50 does/fawns), an increase from the 2011 harvest of 990 deer (965 bucks and 25 does/fawns). The 2011 harvest represents the lowest reported harvest in the past 15+ years. The hunting seasons in 2011and 2012 were more conservative compared to previous years, as all doe/fawn harvest opportunities were eliminated (except for youth), season lengths were slightly shortened, and limited quota licenses (including non-resident quotas) were reduced for 2012. Harvest and hunter effort trends correlate well with estimated population trends as this deer population has steadily been decreasing, with a slight increase during 2012. Harvest rates vary among certain hunt areas, as hunting pressure is highest in Hunt Areas 142, 152, 153 and 154, partially attributed to higher deer densities and little to no wilderness area limitations.

Population
The WGFD changed modeling techniques for all of our big game herd units, effective July 2012. The new spreadsheet model designed by the Colorado Division of Wildlife uses harvest sex/age ratios, and survival data. The Time-Specific Juvenile and Constant Adult Survival (TSJ,CA) Model showed the best overall fit compared to the other models (Fit = 71 and Relative AICc = 161) resulting in a 2012 postseason population estimate of approximately 22,000 . The TSJ,CA model appears to have a reasonable population estimate, in addition observed male:female ratios track very well. This 2012 population estimate is 31% below the desired objective of 32,000 for this herd unit.

Management Summary
The combination of fluctuating reproductive rates, fawn survival, natural gas development impacts on the Mesa winter complex, and habitat conditions are the primary factors regulating population trends in the Sublette herd unit. The winter/spring losses (fawns and adults) during 2010-11 dropped this population to one of lowest levels ever documented. In addition to years with large winter die-off, other population setbacks have been common in this herd and are primarily attributed to poor fawn survival and poor forage conditions on winter ranges. Overall habitat conditions remain poor, but conditions have improved in certain years. Although the current management direction is for maximum population growth (no female harvest), female harvest will be necessary at some point in the future to offset further degradation of crucial winter habitats and poor survival rates. Population estimates indicate the population is 31% below the objective of 32,000 and without multiple years of good forage production and over-winter fawn survival, this herd will most likely not gain any significant growth. Buck ratios are meeting herd goals (special status; 30-45 bucks:100 does), suggesting this herd should be able sustain current harvest levels.

A general license deer season for most hunt areas (except Areas 141/162) will open on September 15, antlered only, and close October 6. Doe/fawn harvest opportunities will be the same as in 2012, as only youth hunters will be allowed to harvest doe/fawn deer. The same white-tailed deer season of 50 limited quota (Type 3) licenses valid for any white-tailed deer,

October 1 – November 30 in Areas 138-140, 142, and 143 is proposed. Limited quota (Type 1) licenses in hunt areas 141 and 162 will remain the same at 100 licenses. Limited quota (Type 1) licenses in hunt area 130 will increase to 25 (+5) licenses with an October 15 to October 31 season. A total of 75 (+25) limited quota doe/fawn licenses (Type 6) in Area 130 are available to address damage concerns on private lands near Farson. The nonresident Region H quota will remain at 800 licenses. The 2013 season is projected to harvest approximately 1,350 deer (1300 bucks, 50 doe/fawns), primarily focused on buck harvest opportunity, while allowing for population growth in this herd unit.

INPUT	
Species:	Deer
Biologist:	Dean Clause
Herd Unit & No.:	Sublette (MD104)
Model date:	5/13/2013 (Model#3)

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	409	418	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	239	255	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	76	161	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993			6294	5284	4543	11155	20982	5235	3329	10461	19026	
1994			8699	7184	4990	10633	22808	7184	3529	10633	21347	
1995			8080	6716	5481	11103	23300	6716	4067	11103	21886	
1996			6507	7849	5233	10800	23882	7849	3633	10800	22283	
1997			7338	9151	5230	10900	25281	9151	4087	10882	24120	
1998			9309	8335	6440	11816	26591	8335	4402	11816	24554	
1999			8593	10406	7234	13100	30741	10395	4508	13075	27979	
2000			8742	12129	8245	15024	35398	12105	4955	14775	31835	
2001			11227	11123	8331	16102	35556	11053	5266	15692	32011	
2002			8399	9633	7482	15733	32849	9555	4487	14838	28881	
2003			10070	11192	6417	14608	32217	11154	4243	14272	29670	
2004			8699	8602	4905	12840	26346	8560	3047	12508	24115	
2005			8832	8248	5241	12727	26217	8192	3484	12538	24215	
2006			9132	9259	5201	12365	26824	9223	3500	11976	24699	
2007			10918	9772	6577	13284	29633	9745	4526	12930	27200	
2008			8738	9097	6504	13154	28755	9021	4927	12785	26732	
2009			9073	7524	6605	12822	26951	7436	4802	12392	24630	
2010			9425	7600	6030	12036	25667	7546	4281	11598	23426	
2011			5799	6228	4861	10651	21741	6221	3800	10630	20652	
2012			7343	7779	5106	10510	23396	7773	3731	10465	21969	
2013			8077	6962	5290	10619	22870	6951	3860	10575	21385	
2014			8077	6967	5313	10626	22906	6956	3883	10582	21421	
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

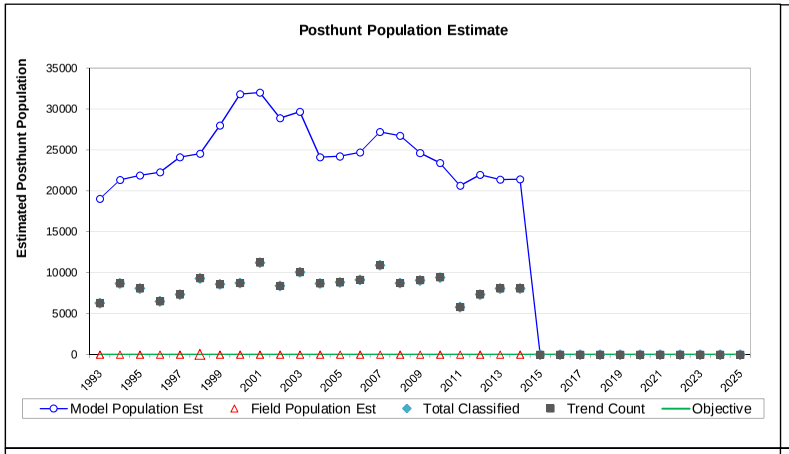
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.79		
1994	0.75			0.79		
1995	0.60			0.79		
1996	0.60			0.79		
1997	0.70			0.79		
1998	0.90			0.79	0.84	0.05
1999	0.90			0.79	0.80	0.05
2000	0.73			0.79	0.83	0.06
2001	0.60			0.79	0.79	0.04
2002	0.60			0.79	0.79	0.04
2003	0.28			0.79	0.81	0.06
2004	0.66			0.79	0.91	0.04
2005	0.60			0.79	0.71	0.07
2006	0.83			0.79	0.79	0.07
2007	0.60			0.79	0.78	0.07
2008	0.60			0.79	0.88	0.05
2009	0.60			0.79	0.83	0.05
2010	0.39			0.79		
2011	0.67			0.79		
2012	0.60			0.79		
2013	0.65			0.79		
2014	0.65			0.79		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

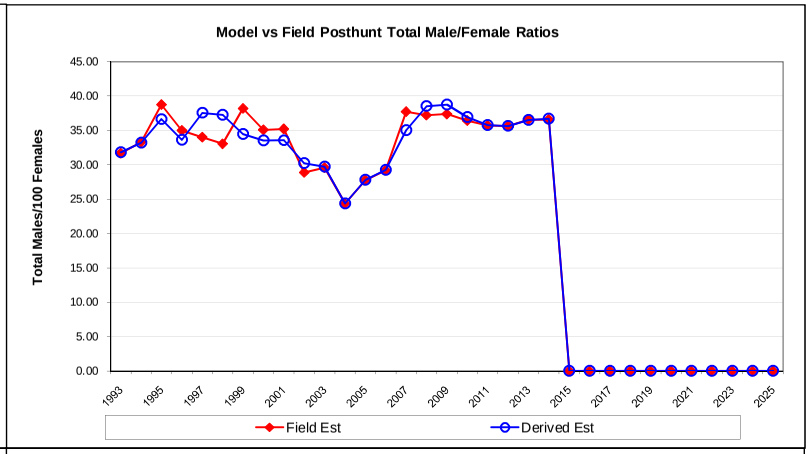
Parameters:	Optim cells
Adult Survival =	0.791
Initial Total Male Pop/10,000 =	0.333
Initial Female Pop/10,000 =	1.046

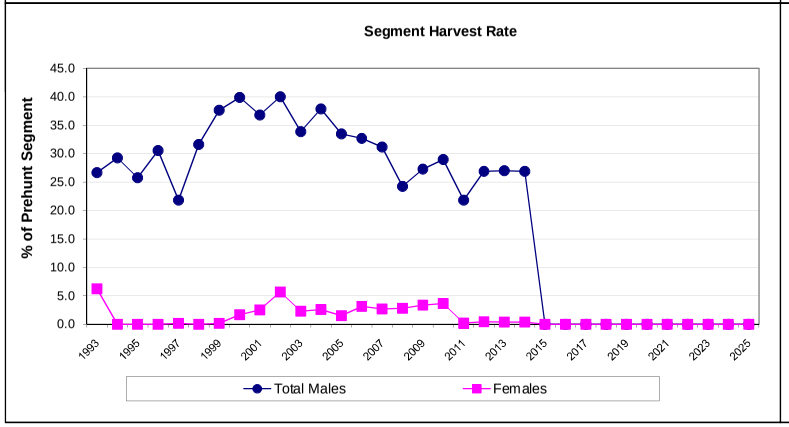
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

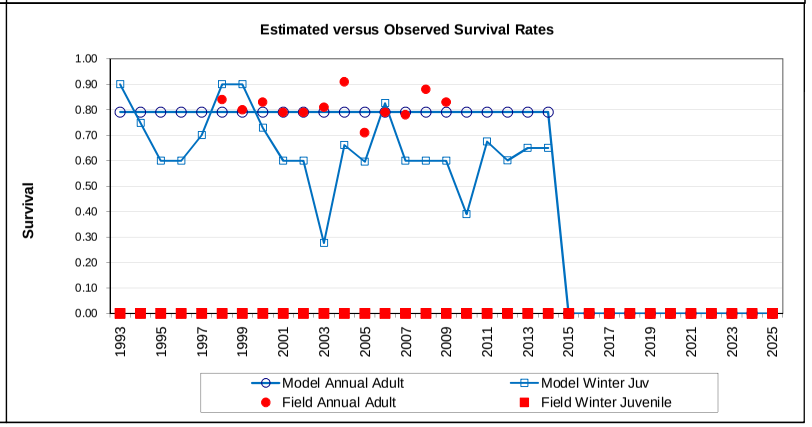
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Classification Counts				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		50.04	1.47	31.83	31.71	1.10	44	1103	631	1778	26.7	6.2
1994		67.56	1.62	33.19	33.29	1.01	0	1328	0	1328	29.3	0.0
1995		60.49	1.55	36.63	38.77	1.15	0	1286	0	1286	25.8	0.0
1996		72.68	2.00	33.64	35.01	1.23	0	1454	0	1454	30.6	0.0
1997		84.10	2.15	37.56	34.04	1.16	0	1039	17	1056	21.9	0.2
1998		70.54	1.62	37.26	33.07	0.98	0	1852	0	1852	31.6	0.0
1999		79.50	1.90	34.48	38.21	1.16	10	2478	23	2511	37.7	0.2
2000		81.93	1.92	33.54	35.10	1.09	22	2991	226	3239	39.9	1.7
2001		70.43	1.48	33.56	35.23	0.93	64	2787	372	3223	36.8	2.5
2002		64.40	1.56	30.24	28.91	0.93	71	2723	813	3607	40.0	5.7
2003		78.15	1.69	29.73	29.61	0.89	35	1976	305	2316	33.9	2.3
2004		68.44	1.60	24.36	24.36	0.82	38	1689	302	2029	37.9	2.6
2005		65.34	1.54	27.79	27.79	0.88	51	1597	172	1820	33.5	1.5
2006		77.01	1.75	29.23	29.22	0.92	33	1546	353	1932	32.7	3.1
2007		75.37	1.61	35.00	37.75	1.01	25	1865	322	2212	31.2	2.7
2008		70.56	1.69	38.54	37.24	1.10	69	1434	336	1839	24.3	2.8
2009		60.01	1.45	38.75	37.40	1.06	80	1639	391	2110	27.3	3.4
2010		65.06	1.52	36.91	36.45	1.03	49	1590	398	2037	29.0	3.6
2011		58.53	1.76	35.75	35.75	1.27	6	965	19	990	21.8	0.2
2012		74.27	1.92	35.65	35.65	1.18	6	1250	41	1297	26.9	0.4
2013		65.73	1.65	36.50	36.60	1.12	10	1300	40	1350	27.0	0.4
2014		65.73	1.65	36.70	36.60	1.12	10	1300	40	1350	26.9	0.4
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



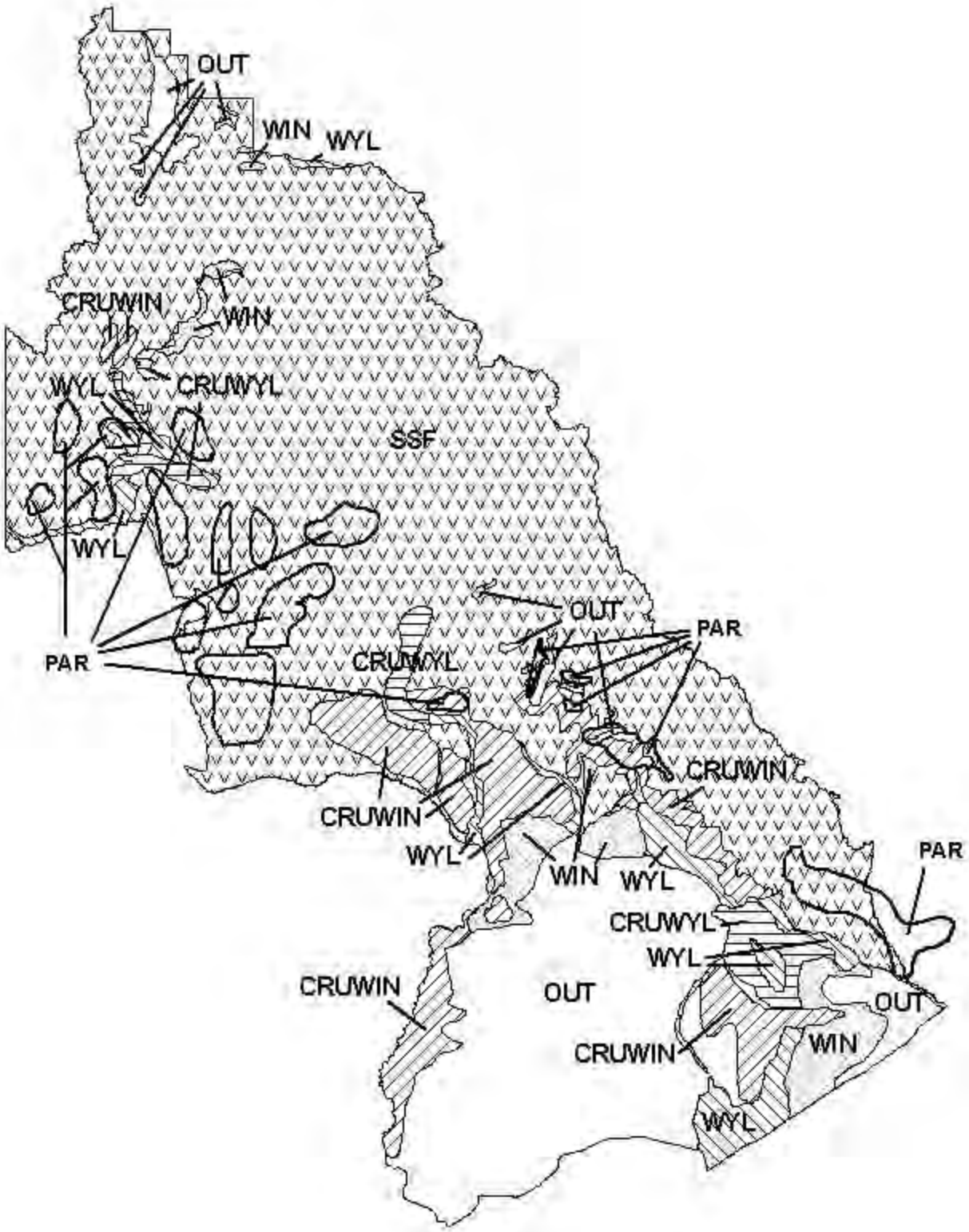






Comments: This modeling exercise assigns the junvenile constraints at 0.6 - 0.9, which tends to optimize down to a 60% fawn surival in the other models.
I believe that on most years a 60% to 90% fawn survival is more representatvie than 40% to 90% in MD104#2Model3-2-12. Fawn Survival constraints were relaxed to 0.2 - 0.9 for those years where documented fawn loss was high.
This TSJ,CA model represents the overall population trends and ratio data very well with the most believable population estimates, although doesn't have as good a "fit" score as MD104#2Model3-2-13.
In addition, the other models (CJ,CA and SCJ,SCA) also represent the trend and ratio data pretty well with believable population estimates, which indicates to me that this is the best overall model.

END



Mule Deer (MD104) - Sublette
HA130, 138-142, 146, 150-156, 162
Revised – 3/05